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the society. The value of the new standard micrometers would produce a uniformity in all measurements made, and in time the recorded results through such a system of procedure would be invaluable. Specialists in the use of the microscope are not any too plentiful in the field of microscopic labor here in America. They do better in Germany. He hoped that through the labors of the society order might be brought to come out of the somewhat confused condition of affairs which now prevails.

CLINICAL ADVANTAGES OF OZONE AND ITS EFFECTS ON THE
MICRO-ORGANISMS OF INFUSIONS, BY GEO. E. FELL, M. D.

(PAGE 69.)

DR. FRED. W. MERCER inquired of Dr. Fell whether the percentage of ozone was estimated for any given result.

DR. FELL replied that no estimates were made. He had placed the ozone apparatus in an aquarium from which the water had been removed, and which was covered partially with glass. Along side of the apparatus he placed the infusions, which were ordinarily prepared. They were then systematically examined, as were also the similar infusions, separate from the ozone, and the result recorded, ozone being heavier than the air insured a concentrated ozonized atmosphere.

DR. HAMLIN said that no principle of practice can be based upon observations that are not complete. Faith in the use of special treatments has been greatly shaken by recent practice. The doctor cited his own experience with carbolic acid. He became a slave to its use and had great confidence in it. He used it with successful results in diphtheria and scarlet fever, but was suddenly brought up with defeat in a family afflicted with scarlet fever, in which the remedy proved of no avail.

DR. S. HUDSON said that the use of antiseptics was of interest to him. He had used them, but with not much effect.

PRESIDENT McCALLA inquired if Dr. Fell had observed the effect of light in any form on the bacteria. Dr. Fell replied that he had been unable to make any such observations.

DR. GRADLE suggested, that the irregularities in the results of Dr. Fell's observations might be due to the different behavior of different species of bacteria to ozone. Experiments by Grossmann and Mayerhausen, and by Szpilman have shown, that while ozone kills the bacteria of putrefaction, it does not harm the *Bacillus anthracis*.

PROF. BURRILL.—Too much dependence is very often placed upon fumigation and the dissemination in the air of so-called disinfectant substances. The fact is, bacteria—the disease germs—are hard to kill, as anyone who carefully experiments, finds out. When they are immersed in liquids this can be done by the addition in certain proportions of substances inimical to them, but it is impossible to medicate the atmosphere in any known manner by any known materials so as to destroy these minute things without, at the same time, making the air totally unfit for any human being to breathe. Indeed any of us would perish long before any bacteria would be disturbed at all.

To attempt, in this way, to purify the air of a room, and much more so the atmosphere of a city, by sprinkling the streets with volatile compounds, is not only futile but misleading, and even dangerous on account of the false sense of security engendered. Let any one try to kill bacteria in liquids, then apply his information and he will so see the absurdity of scenting the air for that purpose.

DR. BLACKHAM.—I wish to contribute an item not exactly microscopical, but bearing practically on the question of disinfection. An old physician with whom I was once associated in practice who was quite a skeptic on these subjects, used to say that he could tell the value of any disinfectant without further experiment than merely smelling the bottle, and his formula was that the effectiveness of a disinfectant is in direct proportion to the badness of its odor. If your disinfectant smells badly enough it forces the people in the house to open their windows and doors and let in fresh air and sun-light. That is all.

DR. FELL.—The object may not be to kill bacteria. We know they are hard to kill, but who will state that the agent will not be discovered which may modify in some manner, their virulence, and still be applicable to therapeutical purposes. It is stated on good authority that ozone sufficiently concentrated will kill bacteria. An attempt to ascertain the effect of respirable quantities upon these organisms in various stages of development is on this account of interest, even if the results should prove negative. As to scenting the air, ozone is a substance which will, I believe, diffuse in liquids as readily as in the atmosphere. When you admit ozone into a house you may obtain fresh air and sunlight without opening the windows or doors or producing the interesting odors to which Dr. Blackham and his associate appears to have been formerly subjected. I am not here, however, to champion ozone. The experiments made were so far as the method of procedure is concerned, carefully conducted. I am not responsible for the results.

REMARKS ON PATHOGENETIC BACTERIA, BY DR. DETMERS. (PAGE 87).

DR. GRADLE inquired whether Dr. Detmers held that the different species of micrococci were possible of conversion into one another.

DR. DETMERS replied that he did not hold to that theory. He believed that bacteria were pathogenetic under some conditions and not under others.

DR. GRADLE further insisted on the necessity of admitting for the present the division of bacteria into distinct and separate species, not convertible into each other. None of the observations intended to prove the mutability of one species into another, can stand rigid criticism. The recent observations by Tropsch, who saw algoid forms like *Cladotrix*, divide into bacillus—and micrococcus—like segments, prove only the phylogenetic relationship of bacteria to higher forms, but not that any given bacillus or coccus can be derived from some higher plant. There is, however, definite proof that the physiological properties of a species of bacteria can be altered by varied conditions of cultivation.